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## (54) METHOD OF FORMING COATING ON INNER SURFACES OF METAL MOLD

(57) By managing a coating material injection time and the like parameters so that they may be controlled within specifically determined ranges, an in-mold coating formation method is provided for manufacturing a molded product coated with a coating layer having a uniform quality in its outside appearance. By continuously and unifyingly managing a mold opening amount and a mold closing force, an in-mold coating formation method and an in-mold coating formation apparatus are provided which are so formed that, if the control of a mold closing force and the control of a mold opening amount are continuously changed and at the same time a high precision and a high response are maintained, it is possible to enlarge a selectable range for selecting a molding condition, thereby producing an integrally formed molded product having an excellent outside appearance and whose coating layer has a high adhesion strength. Further, there are provided a mold having a specifically formed auxiliary cavity and an in-mold coating formation method which employs said mold, so that it is possible

to prevent a coating material from leaking out of the mold, thereby shortening the molding formation cycle, and making it possible to manufacture a molded product having a stabilized quality. Moreover, by controlling an internal pressure in the mold cavity under a predetermined condition after the injection of the coating material, there is provided a further in-mold coating formation method which makes it possible to obtain an integrally formed molded product whose coating layer has a sufficient strength with the molded product, without having to use a special coating material and a special resin to be used for molding. In addition, by using a mold having a specifically shaped sub-cavity, there is provided a still further in-mold coating formation method which can keep mold temperature at a relatively low value, cause the coating material to cure at a predetermined temperature and within a predetermined time period, thereby shortening the molding formation cycle, improving the productivity, improving the physical properties of a coating layer, thus obtaining a good molded product.

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